Draft Supplemental Work Plan No. 4
and
Draft Environmental Impact Statement
for the
Lost River Subwatershed
of the
Potomac River Watershed
Hardy County, West Virginia

INTRODUCTION

The Lost River Subwatershed Work Plan, for watershed protection and flood control, was approved for operations on February 11, 1975, under the authority of the Flood Control Act, Public Law 78-534. Sponsors of the project are Hardy County Commission, Potomac Valley Conservation District, and the West Virginia State Conservation Committee.

The Work Plan, prepared in October 1974, includes provisions for land treatment measures covering 94,750 acres, four single-purpose flood control dams, and one multiple-purpose flood control/recreation dam. A Final Environmental Impact Statement (FEIS) was issued in October 1974, covering the work to be installed as described above. For a detailed description of project elements, alternatives, environmental resources, and projected impacts, the 1974 FEIS should be consulted. This document is available from the NRCS at the following address:

USDA – Natural Resources Conservation Service
75 High Street, Room 301
Morgantown, West Virginia 26505

The 1974 Work Plan has been supplemented three times to add sponsors, change the land treatment program, and add rural water supply to one structure. Currently, land treatment measures have been applied on 95,708 acres and three of the five originally planned dams; Site 4, Site 27, and Site 10; are complete. The primary purposes of this Supplement are to compile and evaluate economic and environmental data necessary for compliance under the National Environmental Policy Act, Clean Water Act, and other pertinent authorities and statutes; evaluate the impacts of deleting the recreational component at Site 16, evaluate the impacts of adding water supply to Site 16, evaluate the impacts of deleting Site 23 from the work plan, and reaffirm project feasibility.

NEED FOR SUPPLEMENT

The 1974 Work Plan – FEIS and previous supplements contain a detailed discussion of aspects of the watershed project that are not explicitly discussed in this report. These documents should be consulted for opportunities, goals, needs, and resource problems pertinent to the Lost River Watershed. There is a need to supplement the Lost River Subwatershed Work Plan – 1974 FEIS due to changes in project purpose and scope.

Statement of Need

There is a need to supplement the 1974 Work Plan, as previously supplemented, due to the sponsors' request to change the purpose of Site 16. There is also a need to update the environmental impact statement, reassess project feasibility, and document changing conditions in the watershed.

Change in Purpose for Site 16:

Lost River Site 16, located in eastern Hardy County near the community of Lost City, was originally planned as a multiple-purpose recreation and flood control impoundment. However, since the original Work Plan for Lost River was written in 1974, additional recreation facilities have been developed nearby at Lost River State Park, Trout Pond, Rock Cliff Lake, and Warden Lake. With the exception of meeting the demand for fishing, these facilities provide adequate recreation for the area and duplicate much of what was planned at Site 16. As a result, the Sponsors requested the deletion of recreation as a project purpose at Site 16.

However, just as changing conditions in the watershed caused the Sponsors to request the elimination of the recreational component, another critical need has been identified. During the re-evaluation of Site 16, the importance of water supply for Hardy County has been emphasized by the local sponsors. In 2004, the Hardy County Water Resources Study identified the need for additional water supplies in eastern Hardy County. In light of rapid development trends in housing and highway construction, Sponsors refined their projected water needs. Residential and commercial water supply needs were projected through Year 2060. Trends in housing growth, population growth, and highway development were used to predict the future water demand in the Lost River Valley. Projections indicate that the water supply in Lost River Site 10 will meet about 75% of the estimated Year 2020 demand during the most critical drought periods. Sponsors recognize an immediate need to seek additional water supply sources. Additional water is needed from other sources to fully meet the projected 2020 need and to partially meet the needs through Year 2060. Appendix E contains the Sponsors' Water Supply Needs

document. Therefore, the Sponsors requested that water supply be evaluated as a potential added purpose to Site 16.

Infrastructure development such as water supply is necessary to meet the needs of a growing population in eastern Hardy County. Public Law 78-534 allows for the addition of water supply in structures, provided there is justification for such a measure. In the case of Site 16, it is proposed that 400 acre-feet of the permanent pool be converted from a recreational pool to a water supply pool. This storage will help meet the water supply needs of a rapidly developing county. Water is essential for development at the Baker Industrial Park and the industrial park proposed for the Wardensville area. Additional fire protection is needed for all of eastern Hardy County. Construction of the Appalachian Corridor H highway, a new four lane route that traverses the watershed, is already spawning development and the need for plentiful, dependable water. Based on the Sponsors' request, this supplement evaluates the potential to add water supply as a purpose to Site 16.

Evaluation of Site 23:

The viability of Site 23, one of the two remaining structures planned as part of the original project, was assessed as part of this report. Site 23 is a single-purpose flood control structure located on Cullers Run 2.5 miles upstream of the confluence with Lost River. Additional engineering and geologic evaluations done in 1999 were reviewed for this report. Results of the geologic investigation did not show adequate on-site material for the construction of the impervious core of an earth embankment. Off-site borrow

material or alternative construction methods, such as roller-compacted concrete, were considered. Any of these methods would increase the cost of the site from the original planning cost (indexed to 2006 dollars) from $4,414,200 to approximately $32,000,000. Based on these engineering and geological concerns, the Sponsors have elected to delete Site 23 from this project. The elimination of Site 23 has no bearing on the effectiveness of Site 16.

SCOPE OF ENVIRONMENTAL IMPACT STATEMENT

This section documents the range of issues and impacts considered in developing this report. Tabulation 1 outlines the concerns identified during the project scoping. The degree of concern and relevance to the proposed action were determined through interagency consultation and through public participation during the development of this supplement.

TABULATION 1
SUMMARY OF SCOPING
LOST RIVER SUBWATERSHED

Resource Concern	Relevant to the Proposed Action?		Rationale
Sponsors, Public, Agencies	**Yes**	**No**	
Flood Damages	X		$1,202,500 in annual flood damages
Soil Erosion and Sedimentation	X		$58,800 in annual sediment & erosion damages
Agricultural Productivity	X		Area of high agricultural productivity
Water Supply	X		Identified as critical need by Sponsors
Recreation	X		Duplicate recreational resources identified; changed purpose as a result
Water Quality	X		Lost River TMDL
NRCS Requirements			
Air Quality		X	Project not in air quality attainment area
Ecologically Critical Areas		X	None present in area of project impact
Endangered and Threatened Species	X		No federally listed species expected to be impacted; (USFWS letter dated August 15, 2005 on file)
Environmental Justice	X		Public workshop encouraged all interested persons to participate in process.
Essential Fish Habitat		X	Lower Cove Run not designated essential fish habitat
Aquatic Resources	X		Convert 2,785 linear feet (1.32 acres) of cold water perennial stream to 46.6 acre warm water lake
Land Use and Upland Habitat	X		Convert 86.6 acres of woodland, hayland and pasture to 46.6 acre lake, dam and spillway
Floodplain Management		X	County zoning ordinance in effect; county participates in floodplain management program
Historic, Scientific, and Cultural Resources	X		Phase I archeology completed; Phase II testing to be conducted in future, determine if Phase III is needed.
Invasive Species	X		Disturbed areas will be revegetated quickly to discourage spread of invasive plants
Migratory Birds		X	No adverse effect on migratory birds
National Economic Development Account	X		Required by the Water Resource Council Principles & Guidelines
Natural Areas		X	No effect on designated natural areas
Parklands		X	None present in area of project impact
Prime & Unique Farmland	X		197.7 acres of prime and important farmland to be removed from agricultural production
Public Health & Safety	X		Potential for loss of life due to flooding
Regional Water Resource Plans/Coastal Zone Management Areas		X	Project is not in a regional water resource planning area or a coastal zone management area
Riparian Areas	X		5,570 linear feet of riparian habitat to be converted to lake, dam and spillway
Scenic Beauty		X	Scenic attributes of watershed not appreciably effected
Waters of the US	X		2,785 linear feet of perennial stream to be converted to dam, spillway and 46.6 acre lake
Wetlands	X		Up to 9.6 acres of potential wetlands may be impacted by the project
Wild & Scenic Rivers		X	Wild & Scenic River Status does not apply

AFFECTED ENVIRONMENT

Population and housing growth, recreational amenities, highway construction, and need for dependable water supplies have increased in the watershed. There has also been growth in the agricultural poultry industry in the Lost River Valley. All other watershed conditions remain similar as described in the 1974 Work Plan – FEIS. Population and housing has expanded more rapidly in the Eastern Panhandle, including Hardy County and the Lost River Valley, than previously predicted. Such increases are associated with new highway construction and with the continuous westward expansion and urban sprawl of the Washington, DC-Baltimore metropolis. Rural areas such as the Lost River Valley are experiencing second home growth and development pressure, spurred, in part, by the construction of the Appalachian Corridor H Highway. A dependable and sustainable water supply is necessary to support this growth. Thus, water supply is being proposed as a project purpose to Site 16 at the request of Project Sponsors. Since the completion of the 1974 Work Plan – FEIS, several recreational amenities have been added to the Lost River area, negating the need to include such facilities at Site 16. As a result, the recreation project purpose is no longer needed.

Environmental impacts at the proposed Site 16 location include no more than 9.6 acres of potential wetlands impacted, 197 acres of prime and important farmland, 2,785 linear feet of perennial cold water stream, 5,570 linear feet of riparian habitat, and 220.7 acres of private land converted to public uses. Four prehistoric sites will require Phase II archeological investigations due to construction impact.

ALTERNATIVES CONSIDERED

Alternative Analysis for Flood Control:

An extensive alternatives analysis was done during the planning phase of the 1974 Lost River Subwatershed project. The 1974 Work Plan - FEIS contains a detailed description of the alternatives studied during formulation of the Lost River project as well as their expected impacts. These alternative measures include land treatment, flood proofing, flood insurance, floodplain purchase, stream channel modification, diking, impoundments, and various combinations thereof. Also considered was the "no project" alternative. The 1974 FEIS should be consulted for more information on the flood control alternative analysis for this watershed project.

Alternative Analysis for Water Supply:

Several water supply alternatives were considered. Ground water and surface water sources were evaluated to determine their potential to meet the future water supply needs of the Lost River Subwatershed.

Groundwater

Two types of ground water sources, wells and springs, are heavily used to meet the present water demands in the area. Currently, wells and springs provide water to all the residents and businesses in eastern Hardy County. Springs are common in Hardy County and are utilized as a water supply source for several localities. Wells are the sole source of water for the approximately 430 poultry house operations in the county, representing an intensive existing demand on the ground water resources.

These ground water sources have restricted yields, particularly for any large scale industrial, commercial, or residential development. They are also subject to poor rates of recharge during periods of drought, as experienced most recently during the drought of 1999. As indicated in the Hardy County Water Resources Report, springs and wells do not have the potential to provide water in sufficient amounts to meet the long-term needs of eastern Hardy County. These sources are especially vulnerable during drought conditions. During the 1999 drought, farmers used the Site 4 impoundment for emergency water supplies. Through the Emergency Conservation Program, producers drilled wells and acquired truck-mounted water tanks to haul water from the impoundment to their operations. This drought event, and the impact it had on the local economy, emphasized the need to consider water supply in any future watershed projects.

Rivers and Streams

Surface waters were also evaluated as to their potential to meet water supply needs. Surface waters are subject to the same drought conditions, making streams and rivers susceptible to extreme low flow and no flow at times. Historical gage flow data (United States Geological Survey river gage at McCauley) show that the Lost River Subwatershed is at base flow during many of the late summer/early fall seasons. Base flow condition exists when the streams are totally recharged by groundwater. Under these conditions, placing an intake in Lost River for removal of any additional water from the stream system would be detrimental to the aquatic ecosystem. There are no water supply

systems dependent on stream intakes in the Lost River Subwatershed due to the unpredictable nature of this supply source.

Water Purchase Agreements

Water purchase agreements were considered as another option to meet the water supply needs of the area. A water purchase agreement is an arrangement in which one community enters into an agreement to purchase water from another nearby municipality. The existing municipal water supply systems in Hardy County serve approximately 39% of the county population, with the Hardy County Public Service District, Moorefield and Wardensville having the largest service areas. The largest potential customer base for expanded public water is in the Baker area. Wardensville is the nearest municipal water system, but constraints such as terrain and limited supply prevent that source from being considered as a reasonable alternative. Moorefield is nearly 22 miles to the west, in the South Branch River Subwatershed, and is too geographically distant to be practical. Therefore, water purchase agreements are not considered the most reasonable alternative.

Water Conservation

In some situations, water conservation measures are a reasonable means of increasing the available water supply. Water conservation measures include reduction of excessive unaccounted for water (i.e., water lost in water systems due to leakage and unmetered use), and use of more efficient appliances and water conservation devices (e.g., low-flow toilets and showerheads, etc.). These measures typically apply to communities which are

being serviced by older systems that are in need of upgrading. Because there are no existing systems in the Lost River Subwatershed, there are no options to implement systematic conservation measures. In reality, many rural households already practice water conservation because of the limited yield of their individual springs or wells. Thus, water conservation measures are not a reasonable option for meeting the future water supply needs of eastern Hardy County.

Impoundments

There are nine impoundments in Hardy County that provide flood control, recreation, and/or water supply benefits. Three of these are located in the Lost River Watershed – Site 27, Site 4 and Site 10. Site 10 is the only impoundment that is designed for flood control and water supply. The potential for Site 10 to meet all the needs of the Lost River Watershed was evaluated as one alternative. The other two sites, Site 27 and Site 4, were also evaluated as to their potential for expansion to include permanent water supply storage.

Site 10 was considered as an alternative to meet all the needs of the entire Lost River Watershed. As per Supplement #3 to the 1974 Lost River Subwatershed Work Plan – FEIS, Site 10 was modified to include 400 acre-feet of dedicated water supply. The safe yield analysis for Site 10 indicates that the site will provide a maximum of about 600,000 gallons per day. This amount falls short of the Sponsors' projected water demand for the Lost River Subwatershed, requiring that an additional source be identified.

Site 27 is located on Upper Cove Run, a tributary of Lost River. The dam site is located approximately 3.0 miles south of the community of Mathias. This is a seventy-three (73) foot high, compacted earth and rock fill impoundment built for flood control. The site controls 3.75 square miles of drainage area. Because of the small drainage area, this site is not suitable for incorporating water supply.

Site 4 is located on Kimsey Run, a tributary of Lost River. The dam site is located approximately one-half (0.5) mile west of the community of Lost River. This is an eighty-nine (89) foot high, compacted earth and rock fill flood control structure. The dam site controls 32.41 square miles of drainage area. With this site's drainage area, it has potential for incorporating a dedicated water supply. Given this potential, the NRCS conducted an investigation of the costs and associated engineering requirements to add 400 acre-feet of water supply to Site 4. The investigation revealed that the elevation of top of dam, auxiliary spillway crest, and intake riser would have to be increased. These measures would require draining the lake for at least one construction season as the changes were made to the structure and appurtenances. There would be a loss of the fishery for three to five years. The costs associated with modifications to Site 4 would be approximately $9,500,000. This amount does not include road and utility relocations or additional landrights. This alternative is not the most cost-effective option.

COMPARISON OF ALTERNATIVES

Two alternatives are presented for comparison, The No Action Future Without Project Alternative and Alternative 1. The No Action Future Without Project Alternative consists of no additional sites being built and no additional costs and benefits incurred. The Sponsors have indicated that no flood control dams will be constructed without a water supply component. The Sponsors would not build Site 16 for a single purpose flood control, water supply or recreation impoundment. The site would not be constructed as a multiple purpose site outside of the context of a PL534 project, due to the high costs associated with planning, designing and constructing a dam and the inability of the Sponsors to solely fund the project.

Several problems will continue without the flood control aspect of the proposed dam. People and livestock will remain at risk, while homes, buildings and crops will continue to suffer monetary damages from flood water. Transportation on Route 259 will continue to be disrupted during floods, which will result in economic losses through lost wages, inventory delays and road repairs. Chemicals and fertilizers will continue to be washed from fields and pastures into streams during floods, resulting in water quality degradation.

The lack of a dependable water supply will result in increased demand on ground water, retarded development and water shortages during droughts. Unregulated stream withdrawals could negatively impact plants, fish and wildlife throughout the watershed as

the streams and river are used during periods of drought. Well production rates are low (<50 gpm) due to the low porosity and hydraulic conductivity of the aquifers, which translates to higher investment and operating costs for the numerous wells required to supply large volume water consumers. The lack of a dependable water supply will also result in higher fire insurance premiums for homeowners and businesses due to insufficient fire protection.

Alternative 1 consists of construction of a multiple purpose impoundment, Site 16, on Lower Cove Run that will provide flood damage reduction and water supply. Site 16 will meet the Sponsors' needs for additional flood damage reduction for the Lost River Valley and it will provide 400 acre-feet of water supply for the needs of current and future residents of the watershed.

TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED

Effects	**Existing Conditions As-built Sites 4, 10, 27; completed land treatment**	**Alternative 1 As-built Sites 4, 10, 27; completed land treatment; construction of Site 16; deletion of Site 23**	**No Action (Future Without Project) Alternative**
Project Investment	$34,074,800	$58,131,800	$0
National Economic Development Account			
Beneficial annual	$2,550,800	$3,486,300	---
Adverse annual	$1,828,100	$3,092,700	---
Net beneficial	$722,700	$393,600	---
Flood Damage Reduction benefit	$457,600	$584,500	---
Water Quality benefits	$218,600	$278,700	---
Changes in Land Use	$52,900	$67,400	---
Incidental Recreation benefits	$736,400	$872,900	---
Secondary & Redevelopment benefits	$390,000	$497,400	---
Water Supply benefits	$628,800	$1,118,900	---
Land Treatment benefits	$66,500	$66,500	---
Environmental Quality Account			
Concerns	**Existing Conditions As-built Sites 4, 10, 27; completed land treatment**	**Alternative 1 (Site 16 Only)**	**No Action (Future Without Project) Alternative**
Threatened & Endangered Species	No adverse effects identified	No federally listed species expected to be impacted	No federally listed species expected to be impacted
Wetlands	0.39 acres of wetlands adversely impacted. Adverse impacts minimized by creation of shallow water areas in upper end of pool.	No more than 9.6 acres of potential wetlands adversely impacted with construction of Site 16. More than 2 acres of are within one foot of the pool elevation in the upper end.	No effects
Waters of the United States	Permanently eliminate 1.94 miles of perennial streams. 2.35 miles of stream subject to temporary inundation.	Site 16 will permanently eliminate 0.52 miles of perennial stream. 0.27 miles of stream subject to temporary inundation by Site 16.	No perennial stream length lost or converted to embankment or lake. No length of perennial stream will be subject to increased temporary inundation.

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TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED

Concerns	Existing Conditions As-built Sites 4, 10, 27; completed land treatment	Alternative 1 (Site 16 Only)	No Action (Future Without Project) Alternative
Aquatic Resources	Create 107.1 acres of permanent lake resources. Create 107.1 acres of flat water public fishing area. Create an estimated	Create 46.6 acres of permanent lake resources with Site 16.	46.6 acres of permanent lake resources would not be created.
Recreation	Create 107.1 acres of flat water public fishing area. Create an estimated 40,217 person/days of fishing recreation annually.	Create 46.6 acres of flat water public fishing area. Create an estimated 7,456 person/days of fishing recreation annually at Site 16.	46.6 acres of flat water public fishing area would not be created. An estimated 7,456 annual person/days of fishing would not be created.
Riparian Areas	3.87 miles of riparian habitat along perennial streams will be eliminated. 4.5 miles of lake shoreline to be created.	An additional 1.05 miles of riparian habitat along perennial stream to be eliminated with Site 16. An additional 1.57 miles of lake shoreline to be created.	1.05 miles of riparian habitat along perennial stream would not be impacted. 1.57 miles of lake shoreline would not be created.
Prime and Unique Farmland	35 acres of prime farmland taken out of production	27.9 acres of prime farmland taken out of production at Site 16.	Agricultural production on 27.9 acres of prime farmland would not be effected.
Water Quality	Temporarily increase erosion, sediment, turbidity, noise and air pollution during construction. Minimize adverse effects by applying BMPs. Lost River temperature increases minimize by installing cold water releases at Sites 4 and 10. Provide storage capacity for 890.4 acre/feet of sediment.	Temporarily increase erosion, sediment, turbidity, noise and air pollution during construction. Minimize adverse effects by applying BMPs. Lost River temperature increases minimized by installing cold water release at Site 16. Provide storage capacity for 229 acre/feet of sediment at Site 16.	No temporary increase in erosion, sediment, turbidity, noise or air pollution would result from construction. No increase in temperature of Lost River would occur. No sediment storage capacity would be created.

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TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED

Concerns	Existing Conditions As-built Sites 4, 10, 27; completed land treatment	Alternative 1 (Site 16 Only)	No Action (Future Without Project) Alternative
Land Use and Upland Habitat	416 acres of land utilized to develop 3 existing sites. 211.4 acres of woodland, hayland and pastureland permanently inundated and used for dam, spillway, and borrow. 186 acres of riparian and terrestrial habitats subjected to temporary inundation for floodwater detention.	231.5 acres required to develop Site 16. 86.6 acres of woodland, hayland and pastureland permanently inundated and used for dam, spillway, and borrow. 40.2 acres of riparian and terrestrial habitats subjected to temporary inundation for floodwater detention.	No private land will be converted to public uses. Agricultural and residential uses would remain on 220.7 acres of private land. No woodland, hayland, or pastureland would be altered by construction, permanently flooded or utilized for floodwater detention.
Invasive Species	Invasive plant species already exist in watershed and at site	BMPs will be used to minimize spread of invasive plants	No effect on the invasive plant species already in watershed and at site
Historic and Cultural Resources	Phase I – 29 sites; Phase II – 21 sites; Phase III – 2 sites	Phase I – 13 sites; Phase II – 4	No additional investigations will be done
Other Social Effects Account			
Human health & safety	Improved with 3 structures built, flooding reduced – health & safety improved	Flooding further reduced with Site 16 – health & safety improved	No further improvement in human health and safety.
Dependable water supply	Improved with Site 10	Further improved with Site 16	No further improvement in water supply. Current situation expected to worsen with increasing demand.
Environmental Justice	No environmental injustices are known to exist	No environmental injustices have been identified as a result of project action	no effect

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TABULATION 2
SUMMARY AND COMPARISON OF CANDIDATE PLANS
LOST RIVER SUBWATERSHED

Regional Economic Development Account			
Beneficial Effect Annualized (Benefits)			
Measures	**As-built Sites 4, 10, 27; completed land treatment**	**As-built Sites 4, 10, 27; completed land treatment; construction of Site 16; deletion of Site 23**	**No further action**
Region	$2,550,800	$3,486,300	$0
Rest of Nation	$0	$0	$0
Adverse Effect Annualized (Costs)			
Region (non-federal costs)	$7,954,100	$10,801,300	$0
Rest of Nation (federal costs)	$26,120,700	$47,330,600	$0

ENVIRONMENTAL CONSEQUENCES

This section describes the effects of each alternative on the resources of concern. The 1974 Work Plan – FEIS contains additional information for each resource concern.

Flood Damages

Existing Conditions

Flooding was the original impetus for the Lost River Subwatershed project and it remains a resource concern for Sponsors. Flood damages continue to adversely impact property and human health and safety. Three of the five planned flood prevention structures are completed, reducing the estimated annual flood damages experienced in the watershed. Refer to Table 5 for more information on flood damage reduction benefits. About 43 square miles of drainage are controlled by Sites 4, 10, and 27.

Alternative 1

Alternative 1 will further reduce flooding in the subwatershed. The installation of Site 16 on Lower Cover Run, a tributary to Lost River, will reduce flood damages and increase the amount of drainage controlled in the subwatershed. A total of about 55 square miles of drainage area will be controlled and flood damages in the subwatershed will be further reduced from the present state. Damage to homes, businesses, roads, bridges, and agricultural property will be reduced. There will be increased agricultural productivity and enhanced quality of life because flooding will be reduced.

No Action Future Without Project Alternative

There will be no further reduction in flooding without the installation of Site 16. Flooding at the current level will continue or possibly increase as the upland areas of the watershed develop. Economic damages to agricultural properties, residences, and

transportation corridors will continue at the present level. There will be no further improvement to human health and safety and quality of life as it relates to reduced threat of flooding.

Soil Erosion and Sedimentation

Existing Conditions

Table 1 shows 95,708 acres of completed land treatment as part of the Lost River Subwatershed Project.

Alternative 1

Alternative 1 will further reduce erosion and sedimentation in the watershed. Site 16 will trap sediment from the 11.88 square miles of drainage area behind this structure. Downstream sediment loads will be further reduced by the installation of Site 16. Any additional land treatment measures that may be applied as part of this project will reduce erosion, enhance the productivity of agricultural land and improve the water quality in the watershed. Damages downstream associated with erosion and sedimentation such as crop losses, fertility losses, land voiding and scouring will be further reduced with the installation of Site 16. Water quality, fish and aquatic habitat, stream capacity, and farm productivity will be further improved. A temporary increase in erosion and sedimentation may occur during construction of the project on Lower Cove Run. However, the adverse effects of construction will be minimized by the employment of best management practices (BMPs) at the site.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. Sediment originating from the 11.88 square mile upstream drainage of Lower Cove Run would not be contained and would be transported to the Lost River main stem. Flood elevations on Lower Cove Run below the impoundment site and the Lost River main stem would not be reduced and there would be no reduction in damage to crops and fertility losses or other impacts to farm productivity associated with unabated flooding. Water quality improvements from reduced turbidity and suspended sediment downstream of the proposed Lower Cove Run project would not be realized.

Agricultural Productivity

Existing Conditions

Agricultural productivity along the Lost River floodplain has been improved with the installation of 3 dams and the land treatment program. Four hundred sixteen acres of private land was converted to public uses, including 35 acres of prime farmland. Tables 5 and 6 show the monetary benefits associated with improved agricultural productivity.

Alternative 1

Alternative 1 will further enhance agricultural productivity by reducing erosion, sedimentation, and flooding in the watershed. The installation of Site 16 will further improve the productivity of hayland and cropland in the Lost River floodplain. Approximately 220.7 acres of private land will be converted to public uses, including 28 acres of prime farmland. With less flooding, repairs to fencing and other farming infrastructure will be required less often. Farm incomes will be further improved. There is no agricultural production on Forest Service lands impacted by the project so there are no effects with regard to this resource concern on Forest Service property.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. Agricultural productivity would continue at current levels as there would be no additional reduction of flood elevations on the Lost River floodplain. The 220.7 acres of privately owned land, including nearly 28 acres of prime farmland, would remain in agricultural uses.

Water Supply

Existing Conditions

Water supply has become an important resource concern since the inception of the 1974 Lost River Subwatershed Plan – FEIS. The current demand for water supply is discussed in detail in the "Need for Supplement" section and in supporting documentation included in Appendix E. Supplement #3 to the 1974 Work Plan – FEIS also discussed the need for water supply. All the entities in the watershed - residents, farmers, businesses, Lost River State Park, and schools – rely on ground water or springs. Droughts and inadequate water supplies restrict economic activity in the watershed.

Alternative 1

Alternative 1 will meet the immediate water supply needs of the Lost River Valley. Economic and agricultural activities will be enhanced with a more dependable water supply. Adequate infrastructure in the form of a dependable rural water system will allow better community planning and growth. An assured water supply will create the opportunity for industrial growth in the Valley. Water sampling information indicates suitable water quality for a public water supply. Water test results are appended to this document.

No Action Future Without Project Alternative

Water supply demands will continue in the future, even without the construction of Site 16. There will be increased pressure on groundwater resources as private wells are used for future development. There may be unregulated withdrawals from surface waters, reducing the surface water quantities to levels that could harm fish and wildlife. The detrimental effects of water shortages and droughts will continue without additional source water development to address the needs. In the long term, economic development will be hampered by lack of dependable water supplies. With the no action alternative, water shortages will occur sooner and more frequently.

Recreation

Existing Conditions

Several recreational facilities have been added in or near the Lost River Subwatershed since the 1974 Work Plan – FEIS was developed. The US Forest Service offers fishing, boating, swimming, camping, picnicking, and other activities at the Trout Pond Recreation Area in George Washington National Forest. Additionally, Lost River State Park has many amenities for residents and tourists, including a swimming pool, cabins, horseback riding, playgrounds, and camp sites. Also, recreational opportunities are available at Warden Lake. There continues to be a high demand for fishing in the area, as is evidenced by the fishing pressure at Lost River Sites 4 and 27. It is expected that there will be intensive use of the lake at Site 10 once the fishery is established. WVDNR continues to invest in these fisheries in the form of stocking and management. Other than

fishing, existing recreational facilities in or near the watershed are sufficient to meet the recreational demand.

Alternative 1

Alternative 1 eliminates the recreational purpose associated with Site 16 and acknowledges that the recreational needs have changed in the watershed. Existing recreational facilities in or near the watershed are sufficient to meet the present and future recreational demand, except for fishing. The effects of the development of Site 16 upon Forest Service land will be reduced because land will not be needed for recreational facilities. Also, there will not be competition between the Forest Service recreational amenities and those initially proposed as part of the Lost River Subwatershed Project. It is estimated that 7,456 annual angular-days of fishing recreation will be provided annually once the Site 16 fishery is established.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. The 46.6 acre permanent impoundment would not be created and the opportunity for 7,456 annual angular-days of fishing recreation would not be realized. Limited fishing opportunities would remain on the existing perennial stream at the Lower Cove Run site.

Water Quality

Existing Conditions

Additional water quality testing was performed by the US Geological Survey from October 1988 to July 1989. Water samples were collected from the same tributary streams and the upper Lost River main stem as were the early 1970 samples (1974 FEIS).

Average water quality values were listed in the 1990 Lost River Supplemental Information Report as: pH 6.7, dissolved oxygen 11.2 mg/l and hardness 37.1 mg/l.

In February 1994, water quality on Upper Cove Run was tested using field methods. These data revealed a pH of 7.1, temperature of 4.3 degrees Centigrade and dissolved oxygen of 13.1 mg/l. Camp Branch of Bakers Run was sampled on May 25, 2000, by NRCS personnel and analyzed by a commercial laboratory. Refer to Lost River Subwatershed Supplement #3 for Camp Branch laboratory analyses.

Alternative 1

Water quality data specific to Lower Cove Run were obtained from several sources. The US Forest Service provided water quality data collected in 1990, 1991, 1992, 1995 and 2002. The WV DEP provided water sample results collected in June 2000. Most recently, samples from Lower Cove Run above and below the proposed project site were collected January 2006 by the WV Department of Agriculture. The results of these analyses indicate good water quality in Lower Cove Run. The results of the water quality testing are contained in Appendix B.

The creation of the 46.6 acre permanent lake on Lower Cove Run would result in increased temperatures in the impounded lake water. The 1974 FEIS estimated that surface water temperatures may increase 5 to 10 degrees F. above the normal stream temperatures in late summer. To avoid adverse impacts to the fishery downstream of Site

16, a cold water release in the principal spillway structure will be included to minimize changes to the downstream water temperatures.

The accumulation of nutrients in the impoundment is not expected to pose a management problem. Forest litter, comprised of leaves and other vegetative matter, will provide the greatest source of organic material to the impoundment. Nutrient sources from agricultural activities or from human habitation in the Lower Cove Run watershed above the impoundment are negligible. Dissolved oxygen levels in the released water will approach saturation levels as a result of aeration through the principal spillway system.

No Action Future Without Project Alternative

Under this alternative, Site 16 would not be constructed and no water would be impounded on Lower Cove Run. Water temperatures and dissolved oxygen would not be altered and would remain as described in the existing conditions. Organic nutrients from vegetative matter would not accumulate as Lower Cove Run would not be impounded.

Threatened and Endangered Species

Existing Conditions

Consultations with the USFWS were made prior to completion of the 1974 Work Plan – FEIS and subsequent supplements. No adverse impacts to threatened or endangered species, or to habitats critical to their existence, were identified within the project areas.

Concerns for the endangered plant species Harperella (*Ptilimnium nodosum*), that exists along the Cacapon River more than 50 miles down stream of the Lost River Project, was discussed in the 1990 Supplemental Information Report. It was determined that no adverse effects to this plant species was expected due to the distance it is located down stream.

Alternative 1

In 2005 consultations with the USFWS were made regarding the proposed Lost River Site 16 project component on Lower Cove Run. The USFWS indicated that "No federally listed endangered and threatened species are expected to be impacted by the project." The addition of water supply as a purpose to Site 16 is not expected to impact listed species. No adverse impacts to endangered or threatened species were identified on National Forest System lands.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed and there would be no adverse impact to any federally listed endangered or threatened species.

Environmental Justice

Existing Conditions

The Lost River Subwatershed is rural and predominately agricultural. There are no federally recognized tribes and there is a very low minority population in the watershed.

Farming is the primary occupation although most families have supplemental off-farm income. The watershed is 99% white. There is no indication that there are environmental justice concerns associated with this project.

Alternative 1

There is no effect on environmental justice with implementation of Alternative 1 on any lands, including Forest Service lands. Public participation opportunities have been made available in the watershed, facilitating access to all interested persons. No people, groups or income classes will be impacted disproportionately via this action.

No Action Future Without Project Alternative

There is no disproportionate effect on minorities, tribes, or low-income persons without the construction of Site 16.

Aquatic Resources

Existing Conditions

Aquatic resources were evaluated in the supplemental documents prepared prior to the implementation of the three existing sites. The three completed sites converted 10,220 linear feet of perennial stream, amounting to approximately 4.7 acres, to 107.1 acres of permanent lake habitat. The stream resources originally supported populations of native non-game fish species. Site 4 on Kimsey Run also supported populations of smallmouth bass and rock bass. Trout were also stocked in Kimsey Run four times per year by the WV DNR to maintain a put and take trout fishery.

The 107.1 acres of permanent lake habitat are managed by WV DNR as warm-water largemouth bass and bluegill fisheries. The Kimsey Run (Site 4) impoundment is also stocked with crappie and channel catfish and receives trout stocking every two weeks from February through May. Site 10, at Parker Hollow, has received habitat enhancements designed to create an "exceptional channel catfish" fishery at that impoundment. Site 10 and Site 27 also have the potential to receive trout stockings in the future if fisherman demand exists and hatchery produced fish are available. Public access is permitted at each of these impoundments.

Aquatic invertebrates collected from the converted stream reaches included dragonfly, stonefly, mayfly, caddisfly, snail and crayfish species.

Alternative 1

An evaluation of the fishery resources for Lower Cove Run was conducted on April 25, 2005, by the WVDNR (See Appendix B). A 100 meter (328 feet) segment of the stream, in the location of the proposed embankment, was sampled using triple pass backpack electrofishing methodology. Fish species collected included brook trout, central stoneroller, mottled sculpin, greenside darter, fantail darter, blacknose dace and longnose dace. A total of 985 individual fish were collected during this survey. Only three individuals of the total sample were brook trout. The total estimated standing stock of the 100 meter reach sampled was 3.785 Kg (8.36 lbs). Brook trout comprised 0.004 Kg

(0.009 lb) of the estimated standing stock. Portions of Lower Cove Run upstream of the project area are stocked with trout by the WV DNR. The stream receives one trout stocking per month from February through May. Fishing access is limited on the privately owned portion of the stream.

Rapid Bioassessment Protocol data were collected by the US Forest Service in April 2002 and March 1995 (Appendix B). Dominant aquatic invertebrates represented in the 2002 dataset include mayflies, fishflies, midges, stoneflies and caddisflies. Dominant invertebrates in the 1995 survey were mayflies and midges. The Macroinvertabrate Aggregated Index for Streams (MAIS) was 17 (very good) for the 1995 survey and 18 (very good) for the 2002 survey.

Under this alternative, about 2,785 linear feet of Lower Cove Run would be displaced by the dam and permanent impoundment. About 1.32 acres of perennial stream would be replaced with a 46.6 acre warm water impoundment. This portion of the stream will be permanently inundated; however, the warm water impoundment will be conducive to the establishment of a bass and bluegill fishery with emphasis on creating an exceptional channel catfish waters. Habitat enhancements for channel catfish will be coordinated by WV DNR fishery biologists. It is possible that a seasonal spring trout stocking program will also be initiated if fisherman demand and the availability of hatchery raised trout are adequate. The impoundment will be stocked and managed for public access by the WV DNR. It is estimated that 7,456 angler days of recreation will be provided annually once the fishery is established.

Aquatic invertebrate populations will shift from those adapted to cold water perennial stream habitats to those favoring warm water lenthic habitats.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. The 46.6 acre impoundment would not be created and there would not be an opportunity to create a warm water bass and bluegill fishery or to create an exceptional channel catfish fishery. About 1.32 acres of cold water perennial stream, comprised of about 2,785 linear feet, would not be converted to a permanent warm water impoundment. Aquatic invertebrate species adapted to perennial cold water streams would remain as the dominant populations in Lower Cove Run.

Land Use and Upland Habitat

Existing Conditions

The effects of constructing Sites 4, 10, and 27 upon land use and upland wildlife habitats were evaluated in the supplemental reports generated prior to the installation of these projects. These three structural sites involved approximately 416 acres of land. Agricultural uses on these acres were eliminated. Upland wildlife habitat on the 107.1 acres permanently inundated was converted to aquatic and riparian habitats. This area included 23.3 acres of forestland, 64.5 acres of pastureland and 9.0 acres of cropland (hayland). An additional 104.3 acres were utilized for the construction of dams, auxiliary spillways and appurtenances associated with these sites. Approximatley 64.7 acres of

forestland, 32.6 acres of pasture, and 6.5 acres of cropland (hayland) were degraded or eliminated as upland wildlife habitat.

Supplemental plantings and the creation of brush piles adjacent to the dams, spillways and borrow areas were made to diversify habitats and reduce the adverse effects of the project construction. Other habitat strategies, including leaving trees and brushy areas in place and allowing hayland and pastureland areas to grow up, were implemented to minimize impacts. These habitat enhancements were selected in consultation with the WVDNR.

In addition to the 211.4 acres utilized for the dams, spillways and permanent pool areas for the three sites, about 186 additional acres were contained within the floodwater detention areas. Areas to be temporarily inundated by floodwater storage for sites 10 and 27 included 20.4 acres of pastureland, 13.5 acres of hayland and 14.4 acres of forestland. Land use for the 135 acres of flood storage pool for Site 4 was not specified. Upland habitat quality was not adversely affected on the flood storage pool areas subjected to temporary inundation.

Alternative 1

Land use and upland habitat for the proposed 231.5 acre Site 16 project area is comprised of 81.0 acres of forestland, 107.4 acres of pastureland, 41.2 acres of hayland (cropland), and 1.8 acres of farmstead (See “Land Use – Cover Type” map, Appendix C). The 10.8 acre portion of the project area on US Forest Service lands is forested. Agricultural uses

on the 220.7 acres of private land would be eliminated. Upland wildlife habitat on 46.6 acres will be permanently flooded and converted to aquatic and riparian habitats. This area is comprised of 19.3 acres of woodland, 13.9 acres of hayland (cropland) and 11.0 acres of pasture. The 2.4 acre (hayland, pastureland, and woodland) difference is a result of the overlap of permanent pool area and the footprint of the dam structure. An additional 40.2 acres will be utilized for the construction of the dam and auxiliary spillway structures. This area is currently comprised of 9.3 acres of woodland, 23.2 acres of pastureland and 7.7 acres of hayland.

In addition to the areas to be utilized for the dam, spillway and permanent pool, an additional 40.2 acres will be periodically inundated by the floodwater retention pool. This area is comprised of 17.4 acres of woodland, 12.2 acres of hayland, 10.4 acres of pastureland and 1.6 acres of farmstead. The difference in acreages is a result of area overlap for the auxiliary spillway and the flood retention pool.

Areas to be utilized for the construction of the dam, auxiliary spillway and the associated borrow areas will permanently alter the existing upland habitats. The dam, spillway and borrow areas, not permanently inundated, will be revegetated with grass and legume seed mixtures. Supplemental planting of trees and shrubs, where they will not interfere with the function of these structures, will be made to diversify habitat. Forestland will be cleared within the permanently inundated area in order to minimize the collection of woody debris around the outlet structure of the dam. Tree stumps and vertical stems will be left in place to provide cover for fish and other aquatic species. Tree tops and other

woody materials removed from the dam and permanent pool areas will be anchored in the upper end of the permanent pool for fish cover. Brush piles or windrows will be placed above the floodpool to provide cover for terrestrial species.

Upland areas to be subjected to temporary inundation for floodwater retention will not be appreciably impacted by the temporary flooding. Woody vegetation in the flood storage pool areas that are not utilized for construction activities will be left in place. Flood storage pool areas, which are presently in grassland uses, will be allowed to evolve through natural vegetative succession or will be enhanced by artificial plantings of tree or shrub species. Habitat enhancements associated with the Site 16 project will be coordinated with the WV DNR and the USFWS.

Some tree removal is planned for the US Forest Service land that will be permanently inundated. The majority of the 10.8 acre Forest Service land in the floodwater retention pool will remain forested. Refer to the "Land Use – Cover Type" map in Appendix C for more information.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be developed. Land use and vegetative cover on the 231.5 acres identified for the project, including the 10.8 acres of Forest Service land, would not be altered and would remain in uses similar to those described under existing conditions.

Historic, Scientific, and Cultural Resources

Existing Conditions

Cultural resource investigations were conducted during the planning stages for Sites 4, 10, and 27. Copies of cultural resources investigative documents pertaining to the existing sites are available upon request. Also, the 1974 Work Plan – FEIS and subsequent supplements contain detailed discussions of findings and mitigation activities related to construction of Sites 4, 10, and 27.

Alternative 1

A cultural resources identification survey of the project area was completed. A total of eight prehistoric sites, five architectural sites, and 15 isolated finds were located. Consultation with the West Virginia State Historic Preservation Office (WV SHPO) indicated that five prehistoric sites warrant further testing or avoidance. One of these five sites can be avoided, and the other four at this time cannot. No further work is recommended for any of the isolated finds or architectural sites. Phase II work will be completed on the four prehistoric sites before construction of Site 16. One of the prehistoric sites is on Forest Service land. Refer to the Investigation and Analysis section of this report for more information.

There are no cultural resources listed on the National Register of Historic Places in or adjacent to any of the project areas. Near the eastern portion of the proposed dam Site 16

the National Forest has surveyed sections of the forest. No recorded sites are listed near the project . To date, the WV SHPO has concurred with all the NRCS findings. Currently, there are no federally recognized tribes in West Virginia, and as such, none were contacted in regards to this project. Hardy County currently is not claimed as an ancestral homeland to native tribes.

In March of 2005 a private consulting firm conducted a Phase I Survey of the proposed dam Site 16. Resources at the WV Division of Culture and History in Charleston, WV were consulted, including the National Register of Historic Places. A full Phase I Report was submitted to SHPO and accepted in July of 2005.

The Forest Service has received a copy of the Phase I report and will be involved in the planning of the Phase II work to be conducted on the site situated on National Forest land. The WV SHPO will also be consulted in the planning of the Phase II work. If mitigation for any of the four sites requiring Phase II work is necessary, consultation with the WV SHPO will be conducted to develop a work plan for each site.

After completion of the Phase I Archaeological Survey, the auxiliary spillway was realigned. This realignment impacts an area that was not previously surveyed. Based on the surrounding area, this area is low probability. A complete Phase I Archaeological Survey will be conducted.

No Action Future Without Project Alternative

Without construction of Site 16, there will be no additional cultural resources investigations and no additional discoveries.

Invasive Species

Existing Conditions

Invasive species, especially invasive plant species, are of concern in all watersheds. According to the WV DNR website (www.wvdnr.gov/wildlife/invasivewv.shtm), 663 species of non-native invasive plants are found outside cultivation in West Virginia. A variety of invasive plant species already exist in the Lower Cove Run watershed; however, these have not been inventoried. Federal and state natural resource agencies have ongoing programs to monitor invasive species, but no specific information exists on conditions in the Lost River Subwatershed.

Alternative 1

Implementation of Alternative 1 and any additional land treatment measures will incorporate best management practices to reduce or minimize opportunities for invasive plant species to become further established. Construction areas and other sites with disturbed soils will be reseeded with desirable plant species as quickly as possible, reducing the opportunities for spread of invasive plant species. Precautions will be taken to avoid the spread of noxious weeds in accordance with state and federal guidelines.

No Action Future Without Project Alternative

Under this alternative, Site 16 will not be constructed. Land disturbances associated with project implementation would not occur and opportunities for the introduction or dispersal of invasive plant species would be avoided. There will be no effect upon invasive species without further project action.

Prime and Unique Farmland

Existing Conditions

The effects upon prime and unique farmland resulting from the installation of the three existing structural sites were addressed in the supplemental reports prepared prior to the installation of those sites. No prime farmland soils acres were identified for areas utilized for Sites 10 and 27. Thirty-five acres of prime farmland soils were identified within the area developed for Site 4 (Kimsey Run).

Alternative 1

The project area under consideration for Site 16 is comprised of approximately 231.5 acres of land. About 220.7 acres of this land is in private ownership and about 10.8 acres is already in public ownership by the US Forest Service. Nearly all of the private portion of land in the project area is utilized for agricultural uses. These uses include grassland production on hayland and pasture to support raising beef cattle and horses. Some acreage has been used for cropland in the past. Three residences (homesteads) are within the proposed project boundary.

Of the total 220.7 private acres, about 197.7 acres are classified as prime or important farmland (See Farmland Map, Appendix C). This includes prime farmland (27.9 acres), statewide important farmland (26.6 acres) and locally important farmland (143.2 acres). None of the US Forest Service land in the proposed project area is classified as prime or statewide important farmlands.

Under this alternative, approximately 220.7 acres of private land would be placed in public ownership for the implementation of the Site 16 project. As a result, 27.9 acres of prime farmland, 26.6 acres of statewide important farmland and 143.2 acres of locally important farmland would be removed from agricultural production due to the implementation of Site 16.

Flowage easements amounting to about 40 acres below the auxiliary spillway would be needed in the event water from the impoundment discharges through that outlet. Agricultural activities would not be restricted on this acreage with the exception that homes, barns, storage sheds or other like improvements would not be permitted within the flowage easement area. Refer to the Important Farmland map in Appendix C for more information.

No Action Future Without Project Alternative

Under this alternative, Site 16 would not be developed. The 220.7 acres of private land would remain in private ownership. About 197.7 acres, including 27.9 acres of prime farmland, 26.6 acres of statewide important farmland and 143.2 acres of locally important

farmland, would remain available for agricultural uses. This alternative would also eliminate the need for approximately 40 acres of flowage easement below the auxiliary spillway.

Public Health and Safety

Existing Conditions

The implementation of 3 flood prevention structures has reduced the stress and mental anguish associated with flooding in the watershed. Site 10 has increased the availability of water supply.

Alternative 1

Alternative 1 will further improve human health and safety by providing additional flood damage reduction in the watershed. Dependable, long-term water supplies will be available at Site 16, coupled with the existing water supply at Site 10. There will be reduced risk to life and property with construction of Site 16. Human health and safety will be further improved with the reduction in flooding.

No Action Future Without Project Alternative

Under this alternative, Site 16 would not be developed. There would be no further reduction in flooding and further improvement in the health and safety of residents who may be at risk due to flooding. There would be no further reduction of flooding to transportation corridors in the watershed and no further improvement in human health and safety related to this concern.

Riparian Areas

Existing Conditions

Riparian habitat was described in the supplemental environmental documents prepared prior to the implementation of Sites 4, 10 and 27. Riparian areas affected by these sites were mostly forested with deciduous tree species. A total of 10,220 linear feet of perennial streams were converted to dam structures and permanent flat water impoundments. Riparian zones associated with these impacted streams were estimated to be 20,440 linear feet in length. These riparian areas were converted to 107.1 acres of flat water environment with a shoreline length of 23,750 feet. Shoreline vegetation was left intact where possible and was allowed to succeed through natural processes. Stock piled wetland topsoil was distributed in shallow water areas of permanent pools to enhance the rapid re-establishment of wetland vegetative species.

Alternative 1

Riparian zones along both sides of Lower Cove Run are mostly forested. The forest cover is dominated by deciduous tree species with scattered conifers and eastern red cedar. The area in the upper portion of the stream in the project area is well shaded by the tree canopy and the streambanks sustain good cover comprised of tree roots, woody debris, boulders and large cobble and undercut banks. In the lower portion of the project area, Lower Cove Run riparian cover has a less dense canopy and an abundance of multifora rose bushes in the vegetative understory. Streambank erosion is more prevalent in that area and sediment bars, comprised of large cobble and gravel, separate the normal

stream channel and the floodplain. Cattle have access to the stream throughout the entire lower portion of the project area reach.

Under this alternative, about 2,785 linear feet of Lower Cove Run would be impacted by the construction of the dam, the permanent pool and the principal spillway outlet. Approximately 5,570 linear feet of riparian habitat would be altered by Site 16 installation. All trees in the area of the dam site would be removed to facilitate construction. All trees upstream of the dam and auxiliary spillway, within the permanent pool of the impoundment, will be cut and removed from the permanent pool area. This clearing is necessary to eliminate trees and floating debris from collecting around the riser (outlet structure) and interfering with its function. Stumps and the lower portion of vertical stems will be left in place for habitat enhancement. The severed portion of the trees will be strategically anchored in the pool area for fish cover and used for the construction of brush pile habitat on upland areas above the flood pool. The approximately 825 feet of Lower Cove Run between the principal spillway outlet and the lower project property boundary will have enhanced riparian vegetation because cattle will no longer have access to the stream and streambanks in that area.

Once the permanent pool of the impoundment is filled, about 6,840 feet of lake shoreline will be created. This area does not include the 1,450 feet of permanent pool shoreline across the upstream face of the dam. Forested areas above the permanent pool will not be removed except where necessary to facilitate construction or for the excavation of borrow material.

No Action Future Without Project Alternative

Under this alternative, no riparian habitat along 2,785 linear feet of Lower Cove Run would be altered as a result of the implementation of Site 16. No tree removal would occur to reduce the hazard of floating debris interfering with the operation of the principal spillway structure. Cattle would continue to have access to Lower Cove Run, and the riparian areas adjacent to it, on the privately owned land in the project area. Lake shoreline totaling approximately 8,290 feet, and riparian areas associated with the impoundment, would not be created. Existing conditions on the 10.8 acres of National Forest System lands would be maintained.

Waters of the US

Existing Conditions

The individual affects of the three existing impoundments upon the waters of the US were addressed in the respective environmental documents for each site. Cumulatively, the dam structures and permanent pools permanently impacted 10,220 feet (1.94 miles) of perennial streams in the watershed. The impoundments at Sites 4, 10 and 27 total 107.1 acres of permanent pool area. Additionally, approximately 12,430 feet (2.35 miles) of perennial streams were subject to periodic inundation in the flood storage pools.

Alternative 1

Approximately 5,985 linear feet of Lower Cove Run lies within the proposed Site 16 project limits. Lower Cove Run is a perennial cold water stream that is 4.6 miles long and drains an area of 11.88 square miles. Lower Cove Run is from 12 to 30 feet wide

through the project area and has an average depth of 12 to 18 inches under normal flow conditions.

Under this alternative, approximately 2,785 linear feet (0.53 miles) of Lower Cove Run would be displaced by the dam structure and permanent impoundment. Of this total, 2,175 feet would be converted from perennial stream to a 46.6 acre permanent impoundment. About 570 linear feet of the stream would be diverted through the dam structure's principal spillway conduit. An additional 180 feet of the stream below the dam would be replaced by about 140 feet of rock-lined outlet channel. Upstream of the permanent impoundment, about 1,425 feet of Lower Cove Run (between the permanent pool elevation and the auxiliary spillway crest elevation) would be subjected to periodic inundation by the 100-year flood storage pool. An additional 810 feet of the stream (between the auxiliary spillway crest and top of dam elevation) may be subject to infrequent inundation; however, this flooding is not expected to differ from the normal out-of-bank flooding resulting from high flows on this reach of the stream. About 825 feet of Lower Cove Run lies between the principal spillway outlet and the proposed downstream limits of the project.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed. Approximately 2,785 linear feet of Lower Cove Run would not be altered by the construction of the dam and

46.6 acre impoundment. An additional 1,425 linear feet of Lower Cove Run would not be subjected to temporary inundation as a result of floodwater detention.

Wetlands

Existing conditions

The effects of implementing the three existing impoundments upon wetlands were addressed in the respective environmental documents for each site. Wetlands of 0.11 acres, 0.2 acres and 0.08 acres were delineated for sites 4, 10 and 27, respectively. Wetland losses were offset by the shallow water areas created in the upstream ends of the permanent pools associated with each impoundment. Topsoil layers of impacted wetlands at Site 10 were salvaged and applied to shallow water areas in the permanent pool to enhance the establishment of wetland vegetation.

Alternative 1

Additional wetland delineations for the Site 16 project area will be completed during the Section 404 permitting process. Within the proposed project area for Site 16, approximately 29.55 acres of hydric soils have been identified (See Soils Report, Appendix B). The majority of these hydric soils are located on the north side of the valley on the north side of Lower Cove Run (Appendix C). Current land use for nearly all of the hydric soils area is hayland and pasture. Cropland applications for some fields have been utilized in the past. Drainage practices consisting of surface drainage ditches were installed years ago and have been maintained by landowners. Because of the drainage practices in place, it appears that the hydrology has been intercepted and

channeled away from the area down slope (south) of the drainage ditch that bisects the hydric soils area.

Hydric soils situated above the drainage ditch may have sufficient hydrology to be classified as wetlands. Within this area, approximately 3.0 acres are wet areas below spring seeps. The spring seep areas are comprised of wet meadow, shrub wetland and forested wetland types. Based on hydric soils mapping units, prior land use activities and the maintenance of drainage systems, it is estimated that no more than 12.11 acres of potential wetlands are present within the Site 16 project area.

Under this alternative, approximately 6.61 acres of hydric soils (potential wetlands) will be adversely affected by the construction of the embankment and by the resulting impoundment. About 2.5 acres of potential wetlands (comprised of about 1.9 acres of wet meadow and 0.6 acres of scrub/shrub wetland types) will be above the permanent pool elevation, but within the 100 year flood storage pool. This area will be subjected to temporary inundation by the flood waters. Additionally, about 3 acres of hydric soils are downstream (west) of the dam structure and may be impacted by the excavation of earth material to be used in the construction of the dam. No more than 9.6 acres of hydric soils (potential wetlands) will be adversely impacted by this project.

It is estimated that about 1 acre of the upper, shallow end of the permanent impoundment will have a depth of one foot or less. An additional one acre, or slightly larger area, will be one foot or less above the permanent pool elevation in the upper end. The hydric soil

areas impacted by previously installed surface drainage and the areas slightly higher than the permanent pool elevation will be enhanced by the higher water tables resulting from the impoundment. These enhancements may be combined with additional mitigation by constructing wetlands in the level area that will be adjacent to the upper end of the permanent pool and in the lower portion of the flood storage pool. Impacted wetlands will have the topsoil layers removed and stockpiled. This topsoil with the associated plant matter and seed content will be distributed in shallow water areas of the impoundment and wetland mitigation sites to facilitate the rapid re-establishment of wetland vegetation.

Wetland delineations will be completed prior to seeking permits for the project. Currently agency personnel are restricted from access to the private property affected by the proposed Site 16 project. Adversely impacted wetlands, under this alternative, would be mitigated. Based upon hydric soils mapping, no more than 7.5 acres of potential wetlands would be subjected to mitigation.

No Action Future Without Project Alternative

Under the no action alternative, Site 16 would not be constructed and the estimated 9.6 acres of potential wetlands would not be altered by the proposed project. Land use, consisting primarily of agricultural grassland production for cattle and horses, would likely continue. Land management practices, including the maintenance of surface drainage systems, would continue to direct hydrology away from potential wetland areas.

ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

There are no adverse environmental effects that cannot be mitigated for with Alternative 1. Adverse social effects related to property acquisition for the effected landowners is acknowledged. Financial compensation will be provided to residents whose property is affected by project actions.

THE RELATIONSHIP BETWEEN SHORT-TERM USE AND LONG-TERM PRODUCTIVITY

In the short-term, there will be construction impacts associated with Alternative 1. Adverse impacts such as erosion and sedimentation will be minimized by the use of best management practices during construction. Minimal land disturbance and temporary mitigation measures will be implemented to reduce or replace short term losses. In the immediate area of the planned structures, long term land use will be changed from agricultural production to a lake environment. Long term productivity of downstream properties will be further enhanced by reduced flooding and increased and improved water supply.

IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

Land obligated by Alternative 1 will be converted from private to public land. Presently, this land is in agricultural, forestry, and residential use. Approximately 0.4 acres of US Forest Service land will be permanently converted to impounded water by Alternative 1. An additional 10.4 acres of US Forest Service land will be periodically inundated. Labor and energy required for construction and maintenance of structural measures associated

with Alternative 1 will be irretrievably committed. Federal funds for Alternative 1 will be expended.

POSSIBLE CONFLICTS WITH LAND USE PLANS, POLICIES, AND CONTROLS FOR THE AREA

There are no known conflicts with any policies or plans in the watershed with respect to Alternative 1.

RISK AND UNCERTAINTY

Estimating project costs and benefits involves a certain degree of risk and uncertainty. Assumptions made during the planning process are based on the best available technology and information at the time of planning. Extended delays between planning and implementation increase the degree of risk and uncertainty. Estimated project costs are based on computed work quantities multiplied by the appropriate unit cost for that type of work. Unit costs are based on historical data from similar projects, indexed to current price levels. Costs can be influenced by several economic factors that cannot be predicted with certainty during the planning process. Fuel shortages, unforeseen labor and materials shortages, natural disasters, and international incidents can adversely affect costs.

Economic benefits are based on material values of floodplain property and infrastructure. Such property is expected to become more valuable in the future as personal income increases. It is probable that some monetary and non-monetary benefits have not been fully captured. Finally, there is inherent uncertainty in estimating the social and

environmental costs associated with Alternative 1 because values and judgment vary among interested parties.

Water supply projections are based on trend data and typical development patterns associated with new highway construction. Demands for water may exceed estimates if a major industrial or commercial water user locates in the watershed. Additionally, a prolonged drought or unforeseen decline in the dependability of groundwater could drastically change the demand for a public water supply.

RATIONALE FOR RECOMMENDED ALTERNATIVE

There are two alternatives for consideration in the context of this report. The No Action Future Without Project (NAFWP) Alternative and Alternative 1. Under the NAFWP Alternative, there would be no additional flood protection and no additional water supply. Needs for these resource concerns would not be met. The NAFWP Alternative is the National Economic Development (NED) Plan because it is the alternative with the greatest net benefits. However, the NED Plan does not meet the Sponsors' needs so it is not the recommended alternative. Alternative 1 provides the additional flood protection and water supply identified as needs by the Sponsors. Alternative 1 also provides non-monetary benefits in terms of improved human health and safety and reduced stress on existing water supplies. These non-monetary benefits are not reflected in the NED calculations. Alternative 1 is the Recommended Alternative because it best meets the Sponsors' needs.

CONSULTATION AND PUBLIC PARTICIPATION

There have been opportunities for public participation at monthly conservation district meetings, WV State Conservation Committee quarterly meetings, and also at Hardy County Commission meetings. Consultation with other interested agencies and entities has also been conducted. An agency coordination meeting was conducted on site in October 2005. Additionally, a widely-advertised public scoping meeting was held in the watershed in August 2006. State and federal agencies such as the US Forest Service, US Fish and Wildlife Service, WV Division of Natural Resources, and the State Historic Preservation Office have been consulted during the planning process.

A public scoping workshop was held on August 1, 2006 at East Hardy Middle School to provide interested individuals and agencies an opportunity to give input into the development of the EIS. There were 25 people in attendance at the workshop, including 11 from the implementing and cooperating agencies and local sponsoring organizations. One other governmental agency representative and 13 individuals with an interest in the project attended.

Comments were taken at the workshop and also after the workshop for a period of 15 days. Seventeen responses were received, including written comments and emails. Comments received regarding alternatives and environmental concerns are summarized in the following tabulation (Tabulation 3). Comments regarding the need for and general support or opposition to the project are outside of the scope of this comment process and are not included in this tabulation. While we acknowledge general support or opposition to this project, these opinions do not factor into our analysis in this EIS.

TABULATION 3
SCOPING COMMENTS RELATIVE TO
ALTERNATIVES AND ENVIRONMENTAL CONCERNS
LOST RIVER SUBWATERSHED

Issues	Number Comments
Consideration of a “no build” alternative	3
Consideration of water supply	8
Demographic assessments	3
Effectiveness of existing dams	7
Land treatment	2
Wetlands	7
Benefit cost analysis	8
Agency consultation	3
Archeology investigations	3
Borrow material sources	1
Recreation alternative	3
Consideration of dredging, channelization, buyouts, etc.	3
Social impact analysis	2
Consideration of moving Site 16 upstream	1
Sediment loads from Lower Cove Run	1
Updated costs for project	1
Wildlife habitat evaluation	3
Stream data	1

When applicable, issues raised at the public scoping meeting were incorporated into the Draft Supplemental Watershed Plan – Draft EIS. Some comments were outside the scope of the workshop.

Additional comments and responses that may be received during the DRAFT review will be included in the Final Supplemental Work Plan – FEIS.

Distribution List:

Virginia R. Painter
Deputy Commissioner
WV Dept. of Education & Arts
Division of Culture and History
1900 Kanawha Blvd, East
Charleston, WV 25305-0300

Tom Chapman, Project Leader
U.S. Department of Interior
Fish and Wildlife Service
694 Beverly Pike
Elkins, WV 26241

Mike Cummings
US Army Corps of Engineers
Pittsburgh District
100 Liberty Avenue
Pittsburgh, PA 15222-4186

WVDEP
Stephanie R. Timmermeyer
Cabinet Secretary
601- 57th St.
Charleston, WV 25304

WVDOT
Paul A. Mattox, Jr., P.E.
Commissioner,
Division of Highways
Building 5
1900 Kanawha Blvd, East
Charleston, WV 25305

Curtis Taylor, Chief
WV Dept. of Commerce
Division of Natural Resources
Wildlife Resources Section
Capitol Complex, Bldg 3
Room 812
Charleston, WV 25305

District II
Rich Rogers, Wildlife Management
Jim Hedrick, Fisheries Management
1 Depot Street
Romney, WV 26757

Joe Manchin III, Governor
State of West Virginia
Bldg 5, Room 100
1900 Kanawha Blvd
Charleston, WV 25305-0700

Truman Wolfe, Exec. Director
WV State Conservation Agency
1900 Kanawha Blvd, East
Charleston, WV 25305

Paul Wilson
WV Chapter Sierra Club
P.O. Box 4142
Morgantown, WV 26508

W. Neil Gillies, Director
Cacapon Institute
Route 1, Box 328
High View, WV 26808

Margaret Janes, DVM
Potomac Headwaters
Resource Alliance
5640 Howards Lick Rd.
Mathias, WV 26812

Lyle Bennett
WVDEP
Division of Water and Waste
Management
601 - 57th Street
Charleston, WV 25304

Roger Anderson
WV Dept. of Commerce
Division of Natural Resources
Operations Center, Ward Rd
P.O. Box 67
Elkins, WV 26241

John Forren
Chief, NEPA Compliance Sect
US EPA, Region III
1650 Arch Street, Mc: 3es30
Philadelphia, PA 19103-2029

William Keplinger, Jr. President
Hardy County Courthouse
204 Washington Street
Moorefield, WV 26836

Bryan Moore,
Executive Director
WV Rivers Coalition
801 N. Randolph Avenue
Elkins, WV 26241

David Rider
US EPA, Region Iii
1650 Arch Street
Philadelphia, PA 19103-2029

John Wagoner, Chairman
Potomac Valley Conservation District
500 East Main Street
Romney, WV 26757-1836

Frank Jezioro, Director
WV Dept. of Commerce
Division of Natural Resources
Capitol Complex, Bldg 3, Rm 669
Charleston, WV 25305

Danny Bennett, Wildlife Biologist
WV Dept. of Commerce
Division of Natural Resources
Operations Center, Ward Road
P.O. Box 67
Elkins, WV 26241

Karen Sykes
US Forest Service
180 Canfield Street
Morgantown, WV 26505

Gus Douglas, Commissioner
WV Department of Agriculture
Bldg 1, Rm M28, State Capitol
1900 Kanawha Blvd, East
Charleston, WV 25305-0170

James Smalls
George Washington & Jefferson National
Forests
Lee Ranger District
109 Molineu Road
Edinburg, VA 22824

Maureen Hyzer, Supervisor
George Washington & Jefferson National Forests
5162 Valleypointe Parkway
Roanoke, VA 24019

Office of Federal Activities – A104
Environmental Protection Agency
401 M Street, SW
Washington, DC 20460
US Dept. of Interior
Secretary of the Interior
US Dept. of Interior
Washington, DC 20240

Director
Office of Environmental Project Review
US Dept. of Interior
Room 2024
Washington, DC 20240

US Dept. of Commerce
Director, Ecology & Conservation Office
Dept. of Commerce, NOAA
14th & Constitution Ave., NW
Room 6222
Washington, DC 20230

US Dept. of Housing & Urban Development
Environmental Officer
Wanamker Bldg.
100 Penn Square, East
Philadelphia, PA 19107

US Dept. of Transportation
Coordinator, Water Resources
US Coast Guard G-MPS1
2100 Second Street, SW
Washington, DC 20590

Director
Office of Advocacy & Enterprise
Room 1345, South Bldg.
Washington, DC 20250

Natural Resources Defense Council, Inc.
1350 New York Ave., NW
Suite 300
Washington, DC 20005

National Wildlife Federation
1412 16th Street, NW
Washington, DC 20036
Attn: Legislative Rep.

Sierra Club
404 C Street, N
Washington, DC 20002

Potomac Valley Audubon Society
PO Box 578
Shepherdstown, WV 25443
304-876-1139
Peter Smith, President

Minear & Associates L.C.
100 Capitol St, Suite 703
Charleston, WV 25301

Stephanie & Anthony Slater
406 Gold Dr.
Broadway, VA 22815

Elizabeth Webster
294 Lower Cove Rd.
Mathias, WV 26812

Mike & Allaina Whetzel
P.O. Box 4
Lost City, WV 26810

Patrick & Joem Webster
824 Lower Cove Run Rd.
Mathias, WV 26812

The Walker Residence
2639 SR 259N
Wardensville, WV 26851

Tom Reid
1494 Lower Cove Run Rd.
Mathias, WV 26812

Don Biller
Lost City, WV 26810

Charles Foltz
1036 Lower Cove Rd.
Mathias, WV 26812

Delia Foltz
1038 Lower Cove Rd.
Mathias, WV 26812

Steven Snapp
1162 Lower Cove Run Rd.
Mathias, WV 26812

Mark Tesoriero
Philip Satolli
874 Lower Cove Run
Mathias, WV 26812

Margarite Little
727 Salem St.
Rockton,Illinois 61072

Patsie Polfliet
8485 Necedah Dr
Roscoe,IL 61073

Marilyn and Conrad Christiano
622 Highland Avenue NW
Washington, DC, 20012

Eunice Webster
256 Black Ridge Rd.
Mathias, WV 26812.

Crystal Lake
[mlake1777@earthlink.net]
No mailing address given

Eileen Preston
[ipreston@rochester.rr.com]
No mailing address given

Individuals listed hereafter will receive postcard notification of the availability of the Draft Plan – EIS:

Mr. Michell Hicks, Chief
Eastern Band of Cherokee Indians
Qualla Boundary, P.O. Box 455
Cherokee, NC 28719

Renee Hypes, Division of Natural Heritage
217 Governor Street, 3rd Floor
Richmond, VA 23219

David Burns
490 Deer Haven
Wardensville, WV 26851

Thomas Cave
100 Manitou Court
Winchester, VA 22603

Steve Dorick
1844 Clovermeadow Dr.
Vienna, VA 22182

Michael E. Dunn
21370 Ashburn Run Place
Ashburn, VA 20147

Bill Fawcett
8645 Koantz Corner Road
Harrisonburg, VA 22802

Dan Hudson
11430 Rosedale Lane
Beltsville, Md 20705

Mr. Russell Townsend
Tribal Historic
Eastern Band of Cherokee Indians
P.O. Box 455
Cherokee, NC 28719

Steven Krichbaum
412 Carter St.
Staunton, VA 24401

Mr. James E. Loesel, Secretary
Citizens Task Force
2428 Guilford Avenue
Roanoke, VA 24015

Dana Mccarron
6402 Northwoods Hollow
Fulks Run, VA 22830

Matthew Mackay-Smith
Old Dominion Endurance Ride
1038 Carters Line Rd
White Post, VA 22663

Bruce Saunders
2520 Fairlawn Road
Durham, Nc 27705

Shenandoah Trail Riders
792 Boliver Road
Fort Valley, VA 22652

Emma T. Suarez, Esq.
Pacific Legal Foundation
3900 Lennane Drive
Suite 200
Sacramento, Ca 95834

Tammy L. Belinsky
9544 Pine Forest Road
Copper Hill, VA 24079

Robert Whitescarver
84 Hewitt Rd.
Swoope, VA 24479-2208

Dr. Hal Young, Jr.
3816 Vinyard Road
Barboursville, VA 22923

Elizabeth Schelin
Nvtr
1467 Dismal Hollow
Front Royal, VA 22630

Marjorie Fleshman
2703 Dorchester Dr., NW
Roanoke, VA 24012

Ray Ritchie
252 High Street
Timberville, VA 22853

Sarah Francisco
Southern Environmental
Law Center
201 W. Main St.,
Suite 14
Charlottesville, VA 22902

Alan Cubbage
Page County Supervisor
117 South Court Street
Luray, VA 22835

Shenandoah Mountain Bike Club
Thomas Jenkins
375 East Wolfe Street
Harrisonburg, VA 22802

Mr. Floyd Reynolds
329 Miller Road
Edinburg, VA 22824

Appalachian Forest Mgmt Group
C/O Tim Goodbar
6800 Rich Patch Road
Covington, VA 24426

Roger Blalock
466, County Road 349
Logan, Alabama 35098

Larry E. Camp
6320 Musket Ball Dr.
Centreville, VA 22020

U.S. Forest Service
Deerfield Ranger District
148 Parkersburg Tpke
Staunton, VA 24401

Alvin Dove
VA Wildflower Preserv.
P.O. Box 785
Harrisonburg, VA 22801

Alvin Estep
Western VA Deer Hunters
15468 Rosebud Lane
Fulks Run, VA 22830

Kenneth Cenger, President
2267 Boliver Rd.
Fort Valley, VA 22652

U.S. Forest Service
James River Ranger District
810-A Madison Avenue
Covington, VA 24426

Jim Keyser
2064 Sulphur Springs Rd
Middletown, VA
22645-3610

Dick Hall
WVDNR
Box 67
Elkins, WV 26241

Sandra P. Long
7546 Smith Creek Road
New Market, VA 22844

John Lawson
President & CEO
Assoc. Public TV Stations
666 Eleventh St, NW, Suite 1100
Washington, DC 20001
Molly Grunmeier
610 Old Fort Road
Winchester, VA 22601

Jim Bensman
Heartwood Forest Watch
585 Grove Ave.
Wood River, Il 62095-1615

Southern Appalachian Forest Coalition, Mark Shelley
46 Haywood St., Suite 323
Asheville, NC 28801-2838

Todd Crowder
P.O. Box 452
Edinburg, VA 22824

David Kocka
P.O. Box 996
Verona, VA 24482

Wild Virginia
P.O. Box 1065
Charlottesville, VA 22902-1065

Mark Zettler
8316 Tobin Road, Unit #12
Annandale, VA 22003-6835

Patrick Sheering
246 Hope Lane
Toms Brook, VA 22660

Ms. Janine Blaeloch
Western Land Exchange Project
P.O. Box 95545
Seattle, WA 98145

Mr. Mark Donham
Ms. Kristi Hanson
Race/Heartwood
Rr #1 Box 308
Brookport, Il 62910

Ben Prater
Southern Appalachian Biodiversity Project
191 Merrimon Ave.
Ashville, NC 28801

Valerie Kanavy
874 Burner Lane
Fort Valley, VA 22652

Michael Hollar
108 S. Whissen Street
Edinburg, VA 22824

Mr. Peter Shoenfeld
713 Chesapeake Ave.
Silver Spring, MD 20910

Brent Long
902 Woods Chapel Road
New Market, VA 22824

Rich Edwards
222 Campbell St.
Harrisonburg, VA 22801

Ed Bachmann
700 Bolinwood Dr.
Apt. 12c
Chapel Hill, NC 27514

Chris Boucher
115 Clover Drive
Chesapeake, VA 23320

John Rice
203 N. Leigh Creek Road
Tetonia, ID 83452

Mark Deren
Seven Fountains Rd.
Fort Valley, VA 22652

U.S. Forest Service
Dry River Ranger District
401 Oakwood Drive
Harrisonburg, VA 22801

Sarah Faulconer
337 Thompson Street
Strasburg, VA 22657

Tom Hawkins
P.O. Box 601
Dayton, VA 22821

Mr. Michael Kaizar
933 Norfolk St.
Pittsburgh, PA 15217-2855

U.S. Fish & Wildlife Service
Virginia Field Office
6669 Short Lane
Gloucester, VA 23061
Attn: Karen Mayne

Ms.Edith Levine
3731 Kanawha St., NW
Washington, DC 20015

Sherman Bamford
PO Box 3102
Roanoke, VA 24015-1102

Michael & Lisa Ielmini
Box 37
Mathias, WV 26812

Christine Wulf
622 Bolling Ave.
Charlottesville, VA 22902

William E. Schmidt
8525 Bradford Rd
Silver Spring, MD 20901

Ms. Louis Strickler
3877 Winding Way Rd., Sw
Roanoke, VA 24015

Dean Miller
14692 Senedo Rd
Edinburg, VA 22824

U.S. Forest Service
Warm Springs Ranger District
Route 1 Box 30
Hot Springs, VA 24445

Janet Tinkham
360 Kings Drive
Fort Valley, VA 22652

Mr. Russell J. Murphy
213 Chancellor Drive
Virginia Beach, VA 23452

Hugh Irwin, Southern
Appalachian Forest Coalition
46 Haywood St., Suite 323
Asheville, NC 28801-2838

Dan Radke
264 Riffey Mtn. Lane
Mathias, WV 26812

Dave Muhly
Rt 2 Box 118
Bland, VA 24315

Mary Ann Wates
936 Gun Barrel Road
White Post, VA 22663

Harold Draper
TVA NEPA Administration
400 West Summit Hill Dr., Wt 8c-K
Knoxville, TN 37902-1499

Mr. Bruce Saunders
2520 Fairlawn Road
Durham, NC 27705

Mr. Jim Tomlin
19625 Charline Manor Road
Olney, Md 20832

Mike Kruse
1420 Early St.
Charlottesville, VA 22902

RECOMMENDED ALTERNATIVE

Refer to the 1974 Work Plan – FEIS and Supplements 1, 2, and 3 for information on the setting and construction specifics for Site 4, Site 27, Site 10 and the land treatment component. The following information is specific for Site 16.

Setting

Site 16 is located in Hardy County on Lower Cove Run. Lower Cove Run is a tributary of Lost River and is regionally within the Potomac River Basin. The site is located approximately 0.5 mile southeast of the community of Lost City (Appendix C).

The site's physiography is valley and ridge with hilly topography. Ground surface elevations in the stream valley range from 1495 to 1520 feet Average Mean Sea Level (AMSL) at the dam site. Elevations of the surrounding hilltops range from 1640 to 2120 feet AMSL. The valley bottom at the dam site is approximately 1,334 feet wide. Hill slopes are moderately steep.

Planned Action

The planned action consists of completing Alternative 1 by constructing Site 16. Site 16 will consist of a compacted earth and rock fill embankment, encompassing a volume of 1,338,000 cubic yards. Fill will be obtained from the excavation of the auxiliary spillway, as well as other sources on site. Borrow areas providing a source of clay soils, necessary to limit water seepage through the dam, will be obtained from the permanent and flood pool areas, along both abutments, and in the auxiliary spillway. A cutoff trench will extend into the foundation, and a drainage system will collect seepage.

The principal spillway is planned as a drop inlet structure consisting of a reinforced concrete riser, a reinforced concrete pipe, and a reinforced concrete impact basin to dissipate energy at the outlet end of the pipe. The auxiliary spillway will be 400 feet wide and shall be located in the left abutment. Approximately 40 acres of flowage easements will be needed in the event of flow through the auxiliary spillway. The surface area of the permanent pool will be 46.6 acres, the surface area of the flood pool at the crest elevation of the auxiliary spillway will be 86.8 acres, and the surface area of the pool at the top of dam elevation will be 97.4 acres. The volume of sediment storage allocation is 229 acre-feet.

Construction will be performed using best management practices, so as to minimize erosion and prevent pollution. Soil disturbance will be kept to a minimum. Disturbed areas will be seeded, limed, fertilized, and mulched immediately after work has been completed.

Temporary bridges or other structures will be used when frequent crossing of streams is required. Diversion channels and sediment basins will be constructed, as necessary, to control sediment discharge from the project area.

Clearing will take place in areas of the permanent pool, dam foundation, auxiliary spillway, and borrow areas. All trees in the permanent pool area will be removed to

minimize long-term operation and maintenance costs to sponsors and to minimize adverse impacts to the riser.

The 46.6 acre permanent pool is designed to include 400 acre-feet of water supply storage, which will be accessed via a water supply pipe, mounted to the riser and extended downstream of the structure.

The permanent pool will be available for incidental public recreation, including fishing and boating. About 231.5 acres, including the permanent pool and adjacent land, will be placed in public ownership (10.8 acres is already in public ownership with the US Forest Service). The land will be owned by the West Virginia State Conservation Committee according to State Code. The site will be maintained by the Sponsors with the Potomac Valley Conservation District (PVCD) in the lead role. The fishery resources will be managed by the WVDNR including angler access, stocking, and law enforcement. Three occupied houses and associated outbuildings and utilities in the flood pool will need to be relocated to accommodate the project.

Permits and Compliance

Section 404 of the Federal Water Pollution Control Act of 1972, as amended, requires that the deposit of dredged or fill material be authorized by the Department of the Army, therefore, a U.S. Army Corps of Engineers permit will be required prior to installation of the project. A Section 401 State Certification as required by the Clean Water Act must be issued by the WVDEP prior to construction. Also, a construction storm water NPDES

permit will be required from the WVDEP, Division of Water and Waste Management. A Special Use permit will be obtained from the US Forest Service. The PVCD will be responsible for obtaining the necessary permits, including permits from the West Virginia Public Lands Corporation.

The PVCD, with assistance from NRCS, will develop temporary and permanent measures to control erosion and sediment that will be implemented by the construction contractor in compliance with state water quality regulations. The measures will include best management practices as well as streambank stabilization, monitoring, and maintenance features.

A "Certificate of Approval" is required from the WVDEP Division of Water and Waste Management – Dam Safety Section pursuant to West Virginia State Code, 47-34-4.

The Sponsors will provide leadership in developing an Emergency Action Plan (EAP) prior to construction and will update the EAP annually with local emergency response officials. NRCS will provide technical assistance in the preparation of the EAP. The purpose of the EAP is to outline appropriate actions and to designate parties responsible for those actions in the event of a potential failure of a floodwater retarding structure.

Project Cost

Project costs include all costs necessary to install the recommended plan. Tables 1 and 2, appendix A, display all estimated project costs. Costs for each project purpose were identified and allocated accordingly.

Construction Cost

Construction cost accounts for all material, labor, and equipment necessary to construct the dam, auxiliary spillway, mitigation, and water supply. These costs were estimated using 2006 prices. Costs for the dam, auxiliary spillway, and water supply system were estimated during the planning phase. Mitigation costs were estimated using traditional methods such as computing quantities of work and material and multiplying that by unit costs taken from sources such as Means Cost Data or recent NRCS bid abstracts.

The planning construction costs are estimated. Detailed structural designs and construction cost estimates will be prepared prior to contracting for the work to be performed. Final construction costs will be those costs actually incurred by the contractor performing the work, including the cost of any necessary contract modifications.

Engineering Costs

Engineering services include all costs associated with the design of the project and preparation of construction drawings. Engineering services cost for the dam design is the actual price paid to the engineering firm for designing the dam. The water supply design costs were estimated as percentages of the estimated construction cost for the respective items. NRCS engineering services cost was included for staff time for design contract supervision.

Project Administration Cost

Project administration cost includes NRCS staff costs for contract administration, construction inspection, and coordination with property acquisition and utility issues.

Costs for land surveys, title opinions, appraisals, review appraisals, negotiations, and relocation assistance advisory are actual contract prices that will be paid for those services. NRCS staff time was estimated based on anticipated salaries for personnel.

Real Property Rights

The Sponsors will be responsible for 25% of the real property rights costs including costs necessary to obtain the land, easements, relocations, utility modifications, and rights-of-way needed to install the project. The acreage needed for purchase and easements was estimated using Hardy County tax maps, topographic maps developed by the NRCS, and USGS 7.5 minute topographic maps. Real property rights will be secured to the top of dam elevation for the flood detention pool. Values for land and structures were estimated with the assistance of local officials. Road relocations and associated costs were estimated from historical contract costs, updated to current prices. Other utilities were estimated using information obtained from maps, visual inspections, and available historic utility modification cost data. These cost estimates will change as more detailed data becomes available and official appraisals are conducted during the acquisition process.

Relocation Payments

Relocation payments are paid to families and businesses that have to be relocated as a result of the project installation. These payments enable relocated families to obtain new

housing without undue financial hardship and assist businesses to relocate with minimal cost. Relocation costs are estimated using the guidelines set forth in the Uniform Relocation Assistance and Real Property Acquisition Act of 1970, as amended.

Operation and Maintenance (O&M)

The Sponsors will be responsible for operation and maintenance costs for the dams, including all annual costs needed to conduct yearly inspections, produce O&M reports, and perform necessary maintenance during the operational life of the project. A specific operation and maintenance plan, utilizing the NRCS National Operation and Maintenance Manual, will be prepared for Site 16 before issuing invitations to bid for construction. The term of this new O&M agreement will be for a period of 100 years, which is the life expectancy of the project.

Installation and Financing

The installation of the project is funded by the NRCS and the Sponsors. Technical assistance is provided by the NRCS. The Sponsors will be responsible for the construction costs and landrights associated with the water supply component at multiple-purpose sites.

LIST OF PREPARERS AND QUALIFICATIONS

NAME	PRESENT TITLE/ OTHER EXPERIENCE (Years in Job)	EDUCATION Degree(s) Continuing Education Subjects	OTHER (licenses, etc.)
Andy Deichert	Civil Engineer (13)	BS & MS Agricultural Engineering	Registered Professional Engineer
Ed Kesecker	District Conservationist (31)	BS Agriculture	
Pam Yost	Economist (14)	BS Resource Management MS Agricultural Economics	
Timothy Ridley	Hydraulic Engineer (18) Consulting Engineer (8)	BS Civil Engineering	Registered Professional Engineer Professional Surveyor
Jeff McClure	Geologist (2) WV DEP Geologist (10)	BS Geology BA Biology	
Bryan Lee	Cultural Resources Specialist (5) Archaeologist (10)	BA Anthropology MA Anthropology	
Ron Wigal	Resource Conservationist (17)	BS Wildlife Management MS Wildlife Management	
Thomas Tamasco	Civil Engineer (2) Dam Safety Engineer (7)	BS Civil Engineering Technology	Registered Professional Engineer

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